

REMARKS

Claims 1, 2, 7, 13-14, 16, 22-24 and 39-42 currently appear in this application. Claims 12, 26-38 have been withdrawn but have not been cancelled. The Office Action of August 9, 2004, has been carefully studied. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed. Applicants respectfully request favorable reconsideration, entry of the present amendment, and formal allowance of the claims.

Rejections under 35 U.S.C. 112

Claims 1, 2, 7-19, 13-14, 16, 22-24 and 39-42 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps. The omitted steps are the steps of DNA immobilization.

This rejection is respectfully traversed. These claims are not directed to a method for immobilizing DNA on a chip but, rather to a chip which is adapted and constructed to have DNA immobilized thereon (claims 1, 2, 7-8). Claims 13, 14, 16, 22-24 and 30-42 are directed to a chip having DNA immobilized thereon. The steps for immobilizing DNA on the chip are immaterial with respect to the present invention, as the present invention is directed to a chip having a substrate

which is useful for DNA immobilization. It is respectfully submitted that one skilled in this art would readily know how to immobilize DNA on a chip, so it is not necessary to recite the steps for immobilizing DNA on the chip. What is critical to the present invention is the substrate having a particular surface which makes it possible to immobilize DNA thereon.

Art Rejections

Claims 1, 11, 13-16 and 25 are rejected under 35 U.S.C. 102(b) as anticipated or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chrisey et al. as defined by Sumiya et al.

This rejection is respectfully traversed. The claims have been amended to recite that the polar group is a sebacyl group which is introduced by treating the substrate with sodium sebacate. Support for this can be found in Example 4, paragraph 0034, beginning on page 11 of the specification as filed. Moreover, the coupling agents have been limited to titanium and aluminum coupling agents. There is no disclosure or suggestion in Chrisey et al. of preparing substrates for DNA immobilization using a sebacyl radical as a source of carboxyl radicals, or of using a titanium or aluminum coupling agent.

Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrisey et al. as defined by Sumiya et al. in view of Fodor et al.

This rejection is respectfully traversed. Fodor et al. disclose that the surface of a substrate for immobilizing DNA is roughened. However, there is nothing in Fodor et al. that discloses or suggests using a sebacyl radical as a source of carboxyl radicals or using titanium or aluminum coupling agent. Without such teaching, Fodor et al. add nothing to the claims as now amended.

Claims 2, 7, 8 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrisey et al. in view of Kobashi.

This rejection is respectfully traversed. As discussed *supra*, the claims have now been amended to recite that the carboxyl radical is a sebacyl radical which is introduced by contacting the substrate with sodium sebacate, and the coupling agent is titanium or aluminum. Kobashi does not disclose or suggest either sodium sebacate or a titanium or aluminum coupling agent. Therefore, it is respectfully submitted that Kobashi does not supply the deficiencies of Chrisey et al.

Double Patenting


Claims 1, 2, 7-10, 13-16, 22-24 and 39-42 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 6,607, 908.

This rejection is respectfully traversed. There is no recitation in claims 1-7 of U.S. Patent No. 6,607,908 that the carboxyl group is introduced by contacting the substrate with sodium sebacate or that the coupling agent is titanium or aluminum.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and favorable action thereon is earnestly solicited.

Respectfully submitted,

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